

**REMARKS/ARGUMENTS**

Claims 1-2, 4, 12, and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Kokawa et al (US 5,467,208). Claims 9-11, 14-15 and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kokawa as applied to claims 1-2, 4, 12 and 23 above. Claims 5-8, 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kokawa as applied to claims above 1-2, 4, 9-12, 14-15 and 20-23 and further in view of Shibata (US 5,724,108).

**1. Request for Continued Examination:**

The applicant respectfully requests continued examination of the above-indicated application as per 37 CFR 1.114.

The amendments made to the claims in the above section are over the last entered amendment.

**2. Rejection of claims 1-2, 4, 12, and 23:**

Claims 1-2, 4, 12, and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Kokawa et al.

Kokawa discloses a liquid crystal display device comprising (see at least Figures 12): a liquid crystal display panel; a light source for providing light beams to irradiate the liquid crystal display panel; and an optical sheet positioned between the liquid crystal display panel and the light source and having a first surface facing the light source, the first surface having a plurality of prisms for totally reflecting portions of ambient light beams that have passed through the liquid crystal display panel to irradiate the liquid crystal display panel; each of the prisms comprising a first plane and a second plane, the included angle

between the first plane and the second plane being in the range 90° (with Applicant's range of 80°-130°).

5 Kokawa discloses the liquid crystal display device comprising each of the prisms being a symmetric structure or an asymmetric structure.

10 Kokawa discloses the liquid crystal display device comprising each of the prisms comprises a first plane and a second plane for totally reflecting portions of the ambient light beams that have passed through the liquid crystal display panel (see at least Figures 4-5).

15 Kokawa discloses the liquid crystal display device comprising the optical sheet comprising a second surface facing the liquid crystal display panel (see at least Figures 4-5).

**Response:**

20 Claim 1 and claim 12 have been amended. The limitation of "the prisms for totally reflecting portions of ambient light beams to increase a brightness of the liquid crystal display device by the portions of ambient light beams" contained in paragraph [0020] has been added to claim 1 and claim 12. The amended claim 1 and claim 12 are listed as following:

Claim 1. A liquid crystal display device comprising:  
a liquid crystal display panel;  
25 a light source for providing light beams to irradiate the liquid crystal display panel; and  
an optical sheet positioned between the liquid crystal display panel and the light source and having a first surface facing the light source, the first surface having a plurality of prisms for totally reflecting portions of ambient light  
30 beams that have passed through the liquid crystal display panel to irradiate the liquid crystal display panel and to increase a brightness of the liquid crystal display device by the portions of ambient light beams, each of the

prisms comprising a first plane and a second plane, an included angle between the first plane and the second plane being in the range between 80° and 130°.

5 Claim 12. A liquid crystal display device comprising:

a liquid crystal display panel; and

an optical sheet having a first surface facing the liquid crystal display panel and a second surface opposed to the first surface, the second surface comprising a plurality of prisms for totally reflecting portions of ambient light beams that have passed through the liquid crystal display panel to irradiate the liquid crystal display panel and to increase a brightness of the liquid crystal display device by the portions of ambient light beams, each of the prisms comprising a first plane and a second plane, an included angle between the first plane and the second plane being in the range between 80° and 130°.

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According to Figs. 1A, 4-6, 11A, 12, 13A, 13C, 13D, 14B, 15C, 16, 17, 20-22, Kokawa discloses that prisms of the sheet face the liquid crystal display panel. In other words, the prisms face an opposite side to the back light source. As a result, Kokawa's liquid crystal display is different from the liquid crystal display device described in claim 1 and claim 12 of the present application. Thus, Kokawa's liquid crystal display does not totally reflecting portions of ambient light beams to increase a brightness of the liquid crystal display device by the portions of ambient light beams, even each of the prisms comprises a first plane and a second plane, and the included angle between the first plane and the second plane is in the range 90°.

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Furthermore, as shown in Fig. 2, 4, 5, 11A, 11B, 13A, 13B, 16-17, col. 7, lines 22-32, col. 12, lines 40-54, abstract, Kokawa teaches that "Total reflection of external incident light at the front surface of the liquid crystal display corresponds to about 11.8% of the external incident light and this figure means that the reflection of external light is reduced to 1/2 in comparison with the previously described conventional liquid crystal display" and "A liquid crystal display including a sheet for

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converging light from a back light source". Accordingly, Kokawa's liquid crystal display includes a sheet for converging light from a back light source to a user, and for reducing the reflection of ambient light beams.

5 Referring to claim 1, Kokawa does not disclose the following limitations: (1) an optical sheet has a first surface facing the light source, and the first surface has a plurality of prisms, and (2) an optical sheet has a plurality of prisms for totally reflecting portions of ambient light beams that have passed through the liquid crystal display panel to irradiate the liquid crystal display panel and to increase a brightness  
10 of the liquid crystal display device by the portions of ambient light beams.

Referring to claim 12, Kokawa does not disclose the following limitations: (1) an optical sheet having a first surface facing the liquid crystal display panel and a second surface opposed to the first surface, the second surface comprising a plurality of  
15 prisms, and (2) an optical sheet has a plurality of prisms for totally reflecting portions of ambient light beams that have passed through the liquid crystal display panel to irradiate the liquid crystal display panel and to increase a brightness of the liquid crystal display device by the portions of ambient light beams.

20 Since Kokawa does not teach all the limitations in the claims 1 and 12, the amended claims 1 and 12 should be patentable in comparison with Kokawa's disclosure. Reconsideration of claims 1 and 12 is respectfully requested. Because claims 2, 4 and 23 are dependent upon claims 1 and 12 respectively, they should be allowable if claims 1 and 12 are allowable. Reconsideration of claims 2, 4 and 23 is  
25 respectfully requested.

### 3. Rejection of claims 9-11, 14-15 and 20-22:

Claims 9-11, 14-15 and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kokawa as applied to claims 1-2, 4, 12 and 23 above for  
30 reasons of records, as cited in pages 3-4 in the above-identified Office action.

**Response:**

Referring to claims 9-11, 14-15 and 20-22, Kokawa does not teach that (1) an optical sheet has a plurality of prisms facing the light source, and that (2) an optical sheet has a plurality of prisms for totally reflecting portions of ambient light beams to increase a brightness of the liquid crystal display device by the portions of ambient light beams. For an optical device, the shapes, the angles, and the relative positions of the optical components can greatly affect the displayed image. Because Kokawa's sheet is for reducing the reflection of ambient light beams, a person having ordinary skill in the art at the time the application was made has no reason to carry out the present application by Kokawa's disclosure.

Since the amended claims 1 and 12 of the present application are not obvious to a person having ordinary skill in the art, the amended claims 1 and 12 should be patentable in comparison with Kokawa's disclosure. As claims 9-11 are dependent upon claim 1 and claims 14-15, 20-22 are dependent upon claim 12, they should be allowed if claim 1 and claim 12 are allowed. Reconsideration of claims 9-11, 14-15 and 20-22 is respectfully requested.

#### 4. Rejections of claims 5-8 and 16-19:

Claims 5-8, 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kokawa as applied to claims above 1-2, 4, 9-12, 14-15 and 20-23 and further in view of Shibata for reasons of records, as cited in page 4 in the above-identified Office action.

#### Response:

As mentioned before, the shapes, the angles, and the relative positions of the optical components can greatly affect the displayed image of an optical device. It is always a challenge to find a proper inner structure so as to improve the optical characteristic of the display device. For example, US 5,467,208, US 5,724,108, US 6,222,689, US 6,191,833 are all patents to employ an optical sheet having desired particular characteristics as achieving advantages such as good brightness or wide viewing angles. However, the structure of the present application is set for increasing the brightness of the liquid crystal display device by the portions of ambient light

beams and provide a needed brightness for the liquid crystal display panel, while the above-mentioned cited references never teach to increase a brightness of the liquid crystal display device by portions of ambient light beams.

- 5       The Examiner points that Shibata discloses a liquid crystal display device comprising an optical (prismatic) sheet employing the Snell law of refraction. However, the liquid crystal display device of Shibata's disclosure is set for widening viewing angle, and the present application is set for **increasing the brightness of the liquid crystal display device by the portions of ambient light beams**. Please refer to Fig. 2 of the present application. Because the light beams  $L_2$  should be totally reflected by the first plane 38a, the included angle  $c$  must be greater than or equal to a critical angle of the optical sheet 36. That is to say  $c \geq \sin^{-1}(n_1/n_2)$ . Since Shibata never teaches to increase a brightness of the liquid crystal display device by the portions of ambient light beams, Shibata does not disclose  $c = \sin^{-1}(n_1/n_2)$ . In other words, the structure of Shibata's optical sheet cannot fit in with the limitations in claims 5-8 and 16-19 of the present application. Claims 5-8 and 16-19 should be allowed in comparison with Shibata's disclosure.

- On other hand, according to Figure 1(a), 1(b), 6, 13, Shibata discloses a liquid crystal display device comprising an optical sheet having a plurality of prisms facing the liquid crystal display panel. The optical sheet is used for converging the emitted light to increase the brightness of the backlight with the same power consumption as used in the conventional apparatus and to reduce power consumption of the backlight. Shibata does not teach that **(1) an optical sheet has a plurality of prisms facing the light source**, and that **(2) an optical sheet has a plurality of prisms for totally reflecting portions of ambient light beams to increase a brightness of the liquid crystal display device by the portions of ambient light beams**.

- Because Kokawa's sheet and Shibata's sheet are not for increasing the reflection of ambient light beams, a person having ordinary skill in the art at the time the application was made has no reason to carry out the present application by Kokawa's disclosure and Shibata's disclosure. Thus, the combination of Kokawa's structure

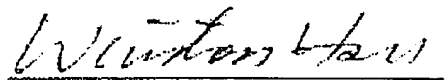
and Shibata's Snell law of refraction cannot bring an optical sheet of the present application. Therefore, the amended claims 1 and 12 should be allowable in comparison with the cited references. As claims 5-8 and 16-19 are dependent upon claims 1 and 12 respectively, they should be allowed if claims 1 and 12 are allowed.

5 Reconsideration of claims 5-8 and 16-19 is respectfully requested.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

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Sincerely yours,



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